## ABSTRACT

Methods and compositions for identifying compounds which disrupt the functional interaction of an intracellular receptor region of an α-subunit of a voltage-gated ion channel and an amino-terminal inactivation region of an ion channel protein are disclosed. Compounds that disrupt the functional or binding interaction of these two regions have significant modulatory effects on ion channel activity, and thus are likely to be useful for treating and/or preventing a wide variety of diseases and pathological conditions associated with ion channel dysfunction. Such conditions include, for example, neurological disorders, cardiac diseases, metabolic diseases, tumor-driven diseases, and autoimmune diseases.